

What is claimed is:

1. A method of making a fibrous electret web, which method comprises:
wetting a fibrous web, which web contains nonconductive polymeric fibers, with a wetting liquid;
5 saturating the wetted web in an aqueous polar liquid; and then substantially drying the web.
2. The method of claim 1, wherein the aqueous polar liquid is water.
- 10 3. The method of claim 2, wherein the water is purified, and wherein the web comprises a nonwoven fibrous web.
4. The method of claim 3, wherein the fibers are microfibers that contain polypropylene and an oily-mist performance enhancing additive.
- 15 5. The method of claim 1, wherein the fibrous electret web is capable of demonstrating a quality factor of at least $0.2 \text{ (mm H}_2\text{O)}^{-1}$ when tested according to the DOP Penetration and Pressure Drop Test.
- 20 6. The method of claim 1, wherein the fibrous electret web is capable of demonstrating a quality factor of at least $0.4 \text{ (mm H}_2\text{O)}^{-1}$ when tested according to the DOP Penetration and Pressure Drop Test.
- 25 7. The method of claim 1, wherein the fibrous electret web is capable of demonstrating a quality factor of at least $0.7 \text{ (mm H}_2\text{O)}^{-1}$ when tested according to the DOP Penetration and Pressure Drop Test.
- 30 8. The method of claim 1, wherein the fibers comprises about 1 wt% fluorochemical oxazolidinone and the fibrous electret web is capable of demonstrating a quality factor of at least $0.9 \text{ (mm H}_2\text{O)}^{-1}$ when tested according to the DOP Penetration and Pressure Drop Test.

5 9. The method of claim 1, wherein the polymeric fibers comprise an additive that is selected from the group consisting of a thermally-stable organic compound or oligomer containing at least one perfluorinated moiety, a thermally stable organic triazine compound or oligomer containing at least one nitrogen atom in addition to those in the triazine group, or a combination thereof, hindered amines, fluorochemical oxazolidinone, poly[[6-(1,1,3,3,-tetramethylbutyl) amino]-s-triazine-2,4-diyl][[(2,2,6,6-tetramethyl-4-piperidyl) imino] hexamethylene [(2,2,6,6-tetramethyl-4-piperidyl) imino]], or combination thereof.

10 10. The method of claim 1, wherein the fibers further comprise an oily-mist performance enhancing additive and wherein the method further comprises the step of annealing the fibrous web before to the step of wetting the web.

15 11. The method of claim 1, wherein the web comprises microfibers.

12. The method of claim 1, wherein fibers contain a fluorochemical additive in or on the fibers.

20 13. The method of claim 1, wherein the web is wetted by compressing the web and permitting the web to return to an uncompressed state while immersed in the wetting liquid.

25 14. The method of claim 1, wherein the web is wetted by directing a flow of the wetting liquid through the web.

15. The method of claim 1, wherein the web is wetted by sonically vibrating the wetting liquid while in contact with the web.

30 16. The method of claim 1, wherein the web is wetted by pressurizing the wetting liquid.

17. The method of claim 1, wherein the web is wetted by soaking the web in the wetting liquid.

5 18. The method of claim 1, further comprising the step of removing excess wetting liquid before saturating the web with the polar aqueous liquid.

10 19. The method of claim 1, wherein the web is saturated by compressing the web and permitting the web to return to an uncompressed state while being immersed in the aqueous polar liquid.

20. The method of claim 1, wherein the web is air dried.

15 21. The method of claim 1, wherein the web is dried by exposing the web to heat.

22. The method of claim 1, wherein the web is dried by exposing the web to a static vacuum.

20 23. The method of claim 1, wherein the web is dried by exposing the web to a stream of a heated drying gas.

24. The method of claim 1, wherein the web is dried by mechanically removing the polar aqueous liquid.

25 25. The method of claim 1, wherein the fibers comprise polypropylene, poly-4-methyl-1-pentene, or blends or copolymers containing one or both of these materials.

30 26. The method of claim 1, wherein the fibers comprise a polyolefin, polyvinylchloride, a polystyrene, a polycarbonate, a polyester, or a blend thereof.

27. The method of claim 1, wherein the fibrous electret web is substantially unpolarized in a plane normal to a plane of the web when subjected to thermally stimulated discharge.

5 28. The method of claim 1, wherein the fibrous electret web exhibits substantially no discharging current when subjected to thermally stimulated discharge.

29. The method of claim 1, wherein the fibrous electret web exhibits substantially no net charge.

10 30. The method of claim 1, wherein the web is a macroscopically homogeneous web.

115 31. The method of claim 1, wherein the fibrous electret web has an unpolarized charge.

32. The method of claim 1, wherein the web has a Measured Charge Density of at least $0.3 \mu\text{C}/\text{m}^2$.

20 33. The method of claim 1, wherein the wetting liquid satisfies the Wetting Test within 5 seconds.

34. The method of claim 1, wherein the wetting liquid satisfies the Wetting Test within 2 seconds.

25 35. A filtration mask adapted to cover the nose and mouth of a wearer comprising the fibrous electret web of claim 1.

36. An apparatus for making a fibrous electret web, which apparatus comprises:
- (a) a first mechanism that is adapted to wet a fibrous web with a wetting liquid;
 - (b) a second mechanism that is adapted to saturate a fibrous web in an aqueous polar liquid; and
 - (c) a drier that is adapted to remove the aqueous polar liquid from a fibrous web.

37. The apparatus of claim 36, further comprising a transport mechanism that is capable of moving the web from the first mechanism to the second mechanism and then to the drier.

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